WHAT IS CLAIMED IS:

1. A method for identifying a modulator of binding and/or function between a DmGPCR1 and a DmGPCR1 binding partner, comprising the steps of:

(a) contacting a DmGPCR1 binding partner and a composition comprising a DmGPCR1 in the presence or in the absence of a putative modulator compound;

(b) detecting binding between the DmGPCR1 binding partner and the DmGPCR1; and

(c) determining whether binding or function in the presence of said putative modulator compound is increased or decreased compared to binding or function in the absence of said putative modulator compound,

wherein said DmGPCR1 binding partner has a sequence with at least 70% sequence identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

2. The method according to claim 1, wherein said DmGPCR1 binding partner has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

3. The method according to claim 1, wherein said DmGPCR1 binding partner has a sequence with at least 95% sequence identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

4. The method according to claim 1, wherein said DmGPCR1 binding partner has a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

5. A method of controlling a population of insects comprising administering a binding partner or a modulator of a DmGPCR1 polynucleotide or polypeptide to an insect to modify the expression or activity of the DmGPCR1, wherein said binding partner has a sequence with at least 70% seqeunce identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

6. The method according to claim 5, wherein said binding partner has a sequence with at least 80% identity to a sequence selected from the group

consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

7. The method according to claim 5, wherein said binding partner has a sequence with at least 95% identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

8. The method according to claim 5, wherein said binding partner has a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

9. The method according to claim 5, wherein said insect is selected from the group consisting of a fly, a fruitfly, a tick, a flea, lice, a mite, and a cockroach.

10. A method of treating or preventing a disease or condition caused by an ectoparasite in a subject comprising administering to said subject a therapeutically effective amount of a DmGPCR1 binding partner, wherein said DmGPCR1 binding partner has a sequence with at least 70% identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

11. The method according to claim 10, wherein said DmGPCR1 binding partner has a sequence with at least 80% identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

12. The method according to claim 10, wherein said DmGPCR1 binding partner has a sequence with at least 95% identity to a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

13. The method according to claim 10, wherein said DmGPCR1 binding partner has a sequence selected from the group consisting of SEQ ID NO: 186 and SEQ ID NO: 187.

14. The method according to claim 10, wherein said subject is a human.

15. 16. A method of binding a DmGPCR with a DmGPCR binding partner comprising the steps of:

contacting a composition comprising a DmGPCR with a DmGPCR binding partner; and

allowing said DmGPCR binding partner to bind said DmGPCR.

16. 17. A method according to claim 15, wherein said DmGPCR is DmGPCR5 (SEQ ID NO: 9).

17. 18. A method according to claim 16, wherein said DmGPCR binding partner is a drotachykinin (DTK).

18. The method according to claim 17, wherein said drotachykinin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of DTK-1 (SEQ ID NO: 169), Met8-DTK-2 (SEQ ID NO: 170), DTK-2 (SEQ ID NO: 171), DTK-3 (SEQ ID NO: 172), DTK-4 (SEQ ID NO: 173), and DTK-5 (SEQ ID NO: 174).

19. The method according to claim 15, wherein said DmGPCR is DmGPCR7 (SEQ ID NO: 17).

20. The method according to claim 19, wherein said DmGPCR binding partner is a leucokinin (LK).

21. The method according to claim 20, wherein said leucokinin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of LK-I (SEQ ID NO: 175), LK-V (SEQ ID NO: 176), LK-VI (SEQ ID NO: 177), and LK-VIII (SEQ ID NO: 178), Culekinin (SEQ ID NO: 179), *Lymnaea* lymnokinin (SEQ ID NO: 180), DLK-1 (SEQ ID NO: 181), DLK-2 (SEQ ID NO: 182), DLK-2a (SEQ ID NO: 183).

22. The method according to claim 15, wherein said DmGPCR is DmGPCR8 (SEQ ID NO: 19).

23. The method according to claim 22, wherein said DmGPCR binding partner is an allatostatin.

24. The method according to claim 23, wherein said allatostatin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of AST-C (SEQ ID NO: 184), or DST-C (SEQ ID NO: 185).

25. A method for identifying a modulator of binding and/or function between a DmGPCR and a DmGPCR binding partner, comprising the steps of:

contacting a DmGPCR binding partner and a composition comprising a DmGPCR

in the presence or in the absence of a putative modulator compound;

detecting binding between the DmGPCR binding partner and the DmGPCR; and

determining whether binding in the presence of said putative modulator

compound

is increased or decreased compared to binding in the absence of said putative modulator compound,

determining whether function in the presence of said putative modulator compound is increased or decreased compared to function in the absence of said putative modulator compound,

wherein said DmGPCR is DmGPCR5 (SEQ ID NO: 9).

26. The method according to claim 25, wherein said DmGPCR binding partner is a drotachykinin.

27. The method according to claim 26, wherein said drotachykinin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of DTK-1 (SEQ ID NO: 169), Met8-DTK-2 (SEQ ID NO: 170), DTK-2 (SEQ ID NO: 171), DTK-3 (SEQ ID NO: 172), DTK-4 (SEQ ID NO: 173), and DTK-5 (SEQ ID NO: 174).

28. A method for identifying a modulator of binding and/or function between a DmGPCR and a DmGPCR binding partner, comprising the steps of:

contacting a DmGPCR binding partner and a composition comprising a DmGPCR

in the presence or in the absence of a putative modulator compound;

detecting binding between the DmGPCR binding partner and the DmGPCR; and

determining whether binding in the presence of said putative modulator compound

is increased or decreased compared to binding in the absence of said putative modulator compound,

determining whether function in the presence of said putative modulator compound is increased or decreased compared to function in the absence of said putative modulator compound,

wherein said DmGPCR is DmGPCR7 (SEQ ID NO: 17).

29. The method according to claim 28, wherein said DmGPCR binding partner is a leucokinin.

30. The method according to claim 29, wherein said leucokinin has a

sequence with at least 80% sequence identity to a sequence selected from the group consisting of LK-I (SEQ ID NO: 175), LK-V (SEQ ID NO: 176), LK-VI (SEQ ID NO: 177), LK-VIII (SEQ ID NO: 178), Culekinin (SEQ ID NO: 179), *Lymnaea* lymnokinin (SEQ ID NO: 180), DLK-1 (SEQ ID NO: 181), DLK-2 (SEQ ID NO: 182), and DLK-2a (SEQ ID NO: 183).

31. A method for identifying a modulator of binding and/or function between a DmGPCR and a DmGPCR binding partner, comprising the steps of:

contacting a DmGPCR binding partner and a composition comprising a DmGPCR

in the presence or in the absence of a putative modulator compound;

detecting binding between the DmGPCR binding partner and the DmGPCR; and

determining whether binding in the presence of said putative modulator compound

is increased or decreased compared to binding in the absence of said putative modulator compound,

determining whether function in the presence of said putative modulator compound is increased or decreased compared to function in the absence of said putative modulator compound,

wherein said DmGPCR is DmGPCR8 (SEQ ID NO: 19).

32. The method according to claim 31, wherein said DmGPCR binding partner is an allatostatin.

33. The method according to claim 32, wherein said allatostatin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of AST-C (SEQ ID NO: 184) or DST-C (SEQ ID NO: 185).

34. A method of controlling a population of insects comprising administering a binding partner or a modulator of a DmGPCR polynucleotide or polypeptide to an insect to modify the expression or activity of the DmGPCR.

35. The method according to claim 34, wherein said insect is selected from the group consisting of a fly, a fruitfly, a tick, a flea, lice, a mite, and a cockroach.

36. The method according to claim 34, wherein said DmGPCR binding

partner is a drotachykinin.

37. The method according to claim 36, wherein said drotachykinin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of DTK-1 (SEQ ID NO: 169), Met8-DTK-2 (SEQ ID NO: 170), DTK-2 (SEQ ID NO: 171), DTK-3 (SEQ ID NO: 172), DTK-4 (SEQ ID NO: 173), and DTK-5 (SEQ ID NO: 174).

38. The method according to claim 34, wherein said DmGPCR binding partner is a leucokinin.

39. The method according to claim 38, wherein said leucokinin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of LK-I (SEQ ID NO: 175), LK-V (SEQ ID NO: 176), LK-VI (SEQ ID NO: 177), LK-VIII (SEQ ID NO: 178), Culekinin (SEQ ID NO: 179), *Lymnaea* lymnokinin (SEQ ID NO: 180), DLK-1 (SEQ ID NO: 181), DLK-2 (SEQ ID NO: 182), and DLK-2a (SEQ ID NO: 183).

40. The method according to claim 34, wherein said DmGPCR binding partner is an allatostatin.

41. The method according to claim 40, wherein said allatostatin has a sequence with at least 80% sequence identity to a sequence selected from the group consisting of AST-C (SEQ ID NO: 184) or DST-C (SEQ ID NO: 185).

42. The method according to claim 34, wherein said DmGPCR modulator is an anti-DmGPCR antibody, a DmGPCR antisense polynucleotide, or a small molecular weight non-peptidic mimetic.

43. The method according to claim 42, wherein said small molecular weight non-peptidic mimetic is an agonist or an antagonist.

44. A method of treating or preventing a disease or condition caused by an ectoparasite in a subject comprising administering to said subject a therapeutically effective amount of a DmGPCR binding partner.

45. The method according to claim 44 wherein said subject is a companion animal, a livestock animal, a horse, or a human.

46. The method according to claim 44 wherein said binding partner is a drotachykinin, a leucokinin, an allatostatin, or an antibody.

47. The method according to claim 44, wherein said binding partner is

an antibody.

48. The method according to claim 47, wherein said antibody is a chimeric antibody, a CDR-grafted antibody, a human antibody, or a humanized antibody.